

00375103-101501

by chemically decomposing cellulose and the like, and bi-functional aliphatic derivatives having almost the same number of carbons as that of the saccharic rings. According to the above method, the backbone structure of the saccharic polymers as raw materials is altered, and therefore, the physical properties of the same can be substantially changed. Further, according to the above method which involves chemical decomposition of saccharic polymers as raw materials, monosaccharides and oligosaccharides can be obtained selectively while separating water-insoluble impurities; thus, the above method is very effective in making good use of used paper of low quality, which is difficult to recycle, lees produced during the pressing process of vegetable resources and so forth.

And after conducting many times a further investigation of polymer compounds having saccharides in their backbone structures as described above, the inventors found that, when a plasticizer-like component, that is, a nonvolatile low-molecular-weight or polymer compound with a flexible middle- or long chain is introduced into the three-dimensional network having been formed by the above polymer compounds being branched and crosslinked in their saccharic moieties, the polymer compounds obtained are resin composites exhibiting satisfactory elasticity and flexibility just as does rubber, and they finally have made this

invention. Specifically, molded forms consisting of the resin composites of this invention can be produced using used paper, waste molasses and so forth as raw materials; accordingly, the production of such molded forms contributes to making good use of waste vegetable resources. Further, molded forms consisting of the resin composites of this invention have properties which allow the molded forms to be used as substitutes for the existing rubber materials; accordingly, they can be used over a wide range and their application can be expected to expand.

(Constitution and Production Method)

The saccharic compounds used in the resin composites of this invention are preferably glucose and oligosaccharides consisting of glucose units (obtained by dehydrating and condensing several monosaccharides through glycoside linkage); however, they may be other monosaccharides (mannose, galactose, etc.) and oligosaccharides containing the same, and moreover, the linkage types (α , β) of oligosaccharides are not necessarily limited. For oligosaccharides, hexasaccharide or oligosaccharides of which polymerization degree is less than 6 are desirably used. The use of heptaoligosaccharide or oligosaccharides of which polymerization degree is more than 7 causes the intended polymer compounds to be harder, which in turn may cause the molded forms

consisting of the polymer compounds to lack in flexibility. The saccharic compounds may also be used in which alkyl groups, acyl groups, etc. are substituted for part of the hydroxyl groups thereof.

5 The bi-functional aliphatic compounds
copolymerized together with the above described
saccharic compounds in the production of the resin
composites of the present invention include, for
example, aliphatic dicarboxylic acids, aliphatic
10 dicarboxylate esters, aliphatic dicarboxylic acid
chlorides and aliphatic diisocyanates.

 The components suitably used as a plasticizer
include, for example, silicone oil, modified silicone
oil, paraffin (solid paraffin, liquid paraffin) and
15 derivatives of fatty acids. When using the resin
composite in applications which do not require high
resistance to water, polyalkylene glycols such as
polyethylene glycol can be used as a component as a
plasticizer.

20 The above described fatty acid derivatives used as
a plasticizer include, for example, monocarboxylic
acids having 8 to 18 carbon atoms, dicarboxylic acids
and the esters thereof; however, these examples are not
intended to limit this invention. When these fatty
25 acid derivatives are aliphatic dicarboxylic acids
having the same acid radical as that of the fatty acid
moiety which constitute the polymer compounds as a

09976103-101501